NOV 25, 2017

The Process of Environmental Planning and Urban Land Use Planning

Final Report

Kaiyuan Li /MLA EP

Course Introduction:

Environmental planning aims at promoting land development with considerations of natural environment, economic, social and political factors to achieve sustainable outcomes. This course draws from theory, history, ecological process, policy and real-life projects to construct a critical analysis of the role of environmental planning, its influences and potential impacts. The final report of this class combines the weekly assignment based on different issues for every week, such as water management and environmental injustice, with a clear stated thesis of urban land use planning which is of personal interest.

Contents

Thesis:

In urban planning, land-use planning seeks to manage the land use in an orderly and efficient way to prevent land-use conflicts and achieve sustainability. Land use decisions are usually an invisible part of urban communities through across the globe. (Etingoff et al., 2017) Urban land use planners are increasingly recognizing the significance of meaningful community engagement strategies to build healthier and more developed future community through detailed urban land use planning.

By analyzing the following cases discussed in this final report, the topics of this class, i.e. Water Management and Climate Change will be viewed in the perspective of urban land use change and planning. How the successful urban land use management leads to both the sustainability of environment and economic development, while those not well-planned which result in land degradation are going to be illustrated specifically.

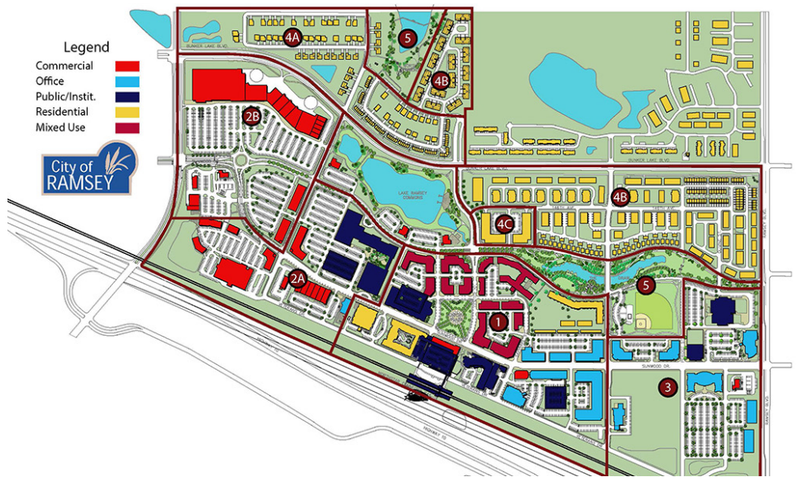


Figure 1

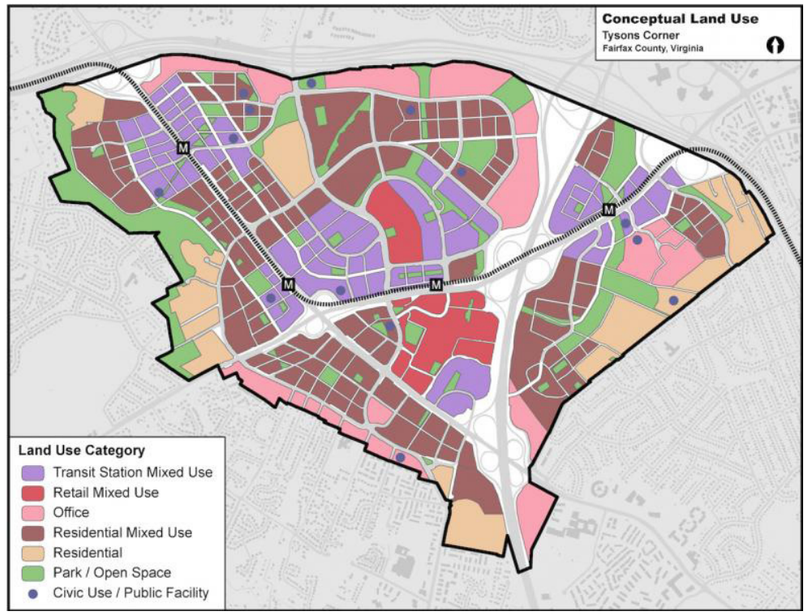


Figure 2

Example Maps of Urban Land Use Planning

Vision Statement:

I want to explore more in the relationship between urban and rural areas. Environment planning should always take the influence of human into account. Considering floor area per person and other factors, does urbanization really affect environment more negatively? Environmental labelling & certification and investigating regional institutions' roles on handling environmental problems also interest me a lot because I have never learned them in China. China is now burdened with population, different kinds of pollution and debates of social rights. I will dedicate to looking for a balance between environmental protection and economic growth.

Key Concepts of Urban Land Use Planning:

1. "Land, as the basic resource upon which communities are built, is unique because it is scarce and fixed in location. Urban land uses affect the environment, transportation and other infrastructures so that it can function. Land use planning relates to the physical environment where we live, while transportation connects us to all of our activities, and it connects our communities. Transportation and land use are mutually dependent and inseparable". (see citation Illinois)

2. "Land-use planning often leads to land-use regulation, which typically encompasses zoning. Zoning regulates the types of activities that can be accommodated on a given piece of land, as well as the amount of space devoted to those activities, and the ways that buildings may be situated and shaped". (Barnette, 2004)

3. The Canadian Institute of Planners offers a definition that land-use planning means the scientific, aesthetic, and orderly disposition of land, resources, facilities and services with a view to securing the physical, economic and social efficiency, health and well-being of urban and rural communities.

1. Environment in Relation to the Urban – Rural Continuum (City & Country) and Tourism

In Nature's Metropolis, Cronon used Chicago as the example to illustrate the relationship of urban and rural areas that, far from being separated or opposed, actually depended on each other as a continuum. He stated several factors that contributed to the rise of this city in the nature of mid-east America. These factors can also be applied to many other cities when studying the construction and formation of them. First, it is Chicago's location that determined different groups of people surrounded it. Sitting between the southern shoreline of Lake Michigan and Mississippi, "one could paddle halfway across the continent" (Cronon). From my personal perspective, location and natural resources are the most important factors at the beginning phase of a city's establishment because they will bring people together.

Fur-trading post which was built in Chicago in 1770s then became a large fur trading center. Chicago itself became a habitat for different races of people, such as British, French and Indian. They managed to gain their living on the network of fur trading and living stock. Chicago provided them a market to exchange living materials while on the other hand, without farmers and hunters producing goods for consumption, Chicago had no reason to exist. Cronon here further enhanced his opinion of combining city and country as a whole continuum. As Chicago became a trading center for both rural areas "the frontier" and city, transportation of commodities in long distance was possible. Farmer's production could be improved because they had more accesses to sell their goods. Chicago was also benefited from this process which helped establishing banks, loans, docks and mills. This part was explicitly economic.

The railway transportation was another important factor that helped not only Chicago, but also other cities such as Wisconsin in transferring goods. Railway extended the distance of transportation so that people could reach a built habitat at the places they could not step their foot on before. Railway opened the gateways from eastern America to the western part and made the exploration of western America became possible. The hinterland of Chicago was far enlarged. The integrated network of transportation provided Chicago more accesses and connections with other places to gather commodities, offer goods as a trading center and become a transportation center.

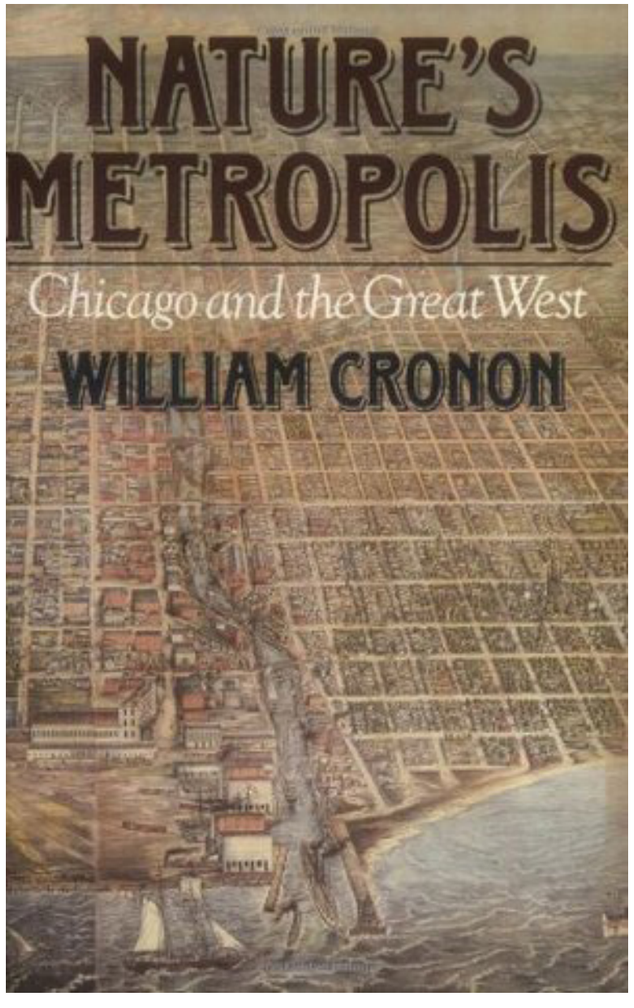


Figure 3

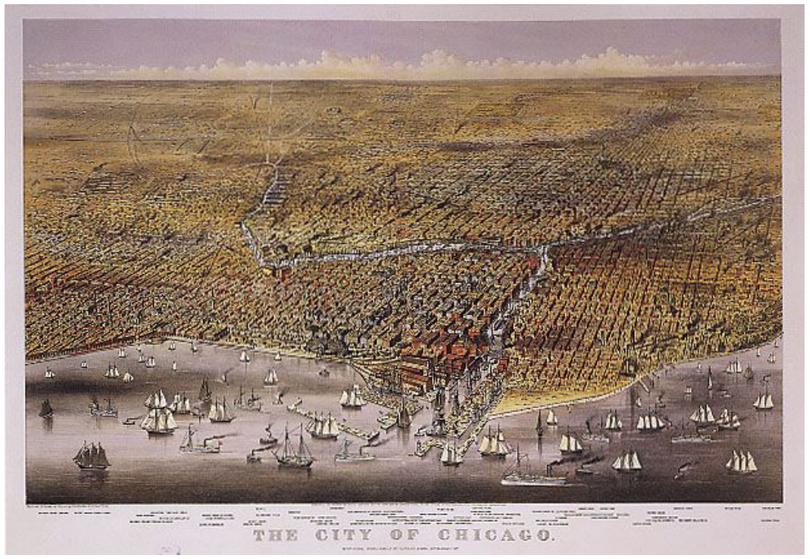


Figure 4: Chicago Bird's View in 1800s

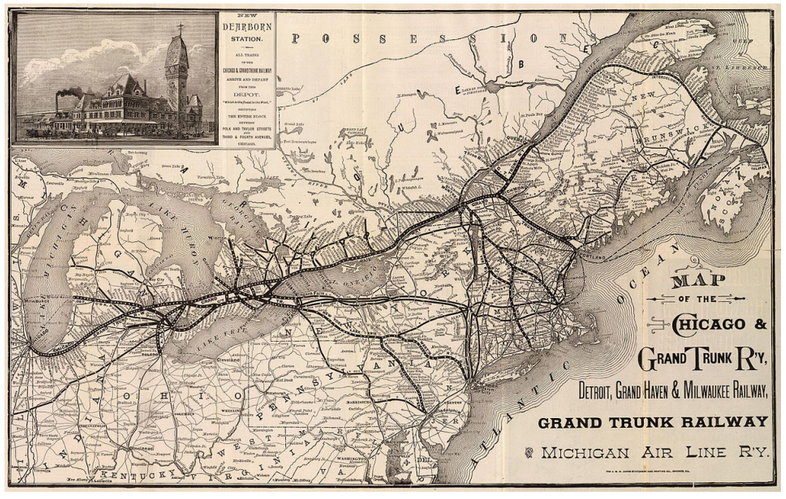


Figure 5: Chicago Railway in 1800s

Tourism has been one of the major forces that influence the shaping of urban and rural areas for a long time. Tourism happened because of the rich historic heritage of cities and more convenient transportation. Monumental buildings and clearly-ordered urban planning attracted people to decide cities as their final destination. However, in the 1960s and 1970s, cities experience hard times due to the waned industrialization. The urban renewal which happened after that caused displacing of poor people in the city center and the renewed prosperity of urban center.

In most cities the process that mentioned above may happen again and again. However, in some international metropolis cities just expand with little restriction. I will provide an example of Beijing, the biggest city in China to demonstrate how cities was influenced by tourism and the change brought by tourism to these cities.

After when Beijing successfully applied for 2008 Olympics in 2001, a six-year plan of city construction including stadium, subway, road and afforestation was implemented. First, several large new stadiums were built to hold over 600,00 people. The most famous one of them is Bird's Nest which combines high technologies in its construction and is multifunctional for many different sports. Bird's Nest continues to be a well-functioned stadium not only for international or domestic games but also for mega events such as concerts and anniversaries. Second, Beijing government determined to change the major way of energy use to build a healthy green environment. Back to 2001, the most common fuel people used to generate heat was coal which is cheap but pollutes the environment badly because of its chemical component often contains PM2.5 and other element such as lead which can cause serious danger to people's health. The usage of coal as energy resource in Beijing was successfully reduced to 20% while at the mean time gas, oil, solar energy and wind energy were prompted. This change brought people more clean air and reduced the chance of respiratory diseases. Third, the transportation system was refined. Beijing built hundreds of new roads which can support more cars compared with older ones. 4-6 lines of subways were built to serve more tourists and the capital airport was also enlarged for international tourists.

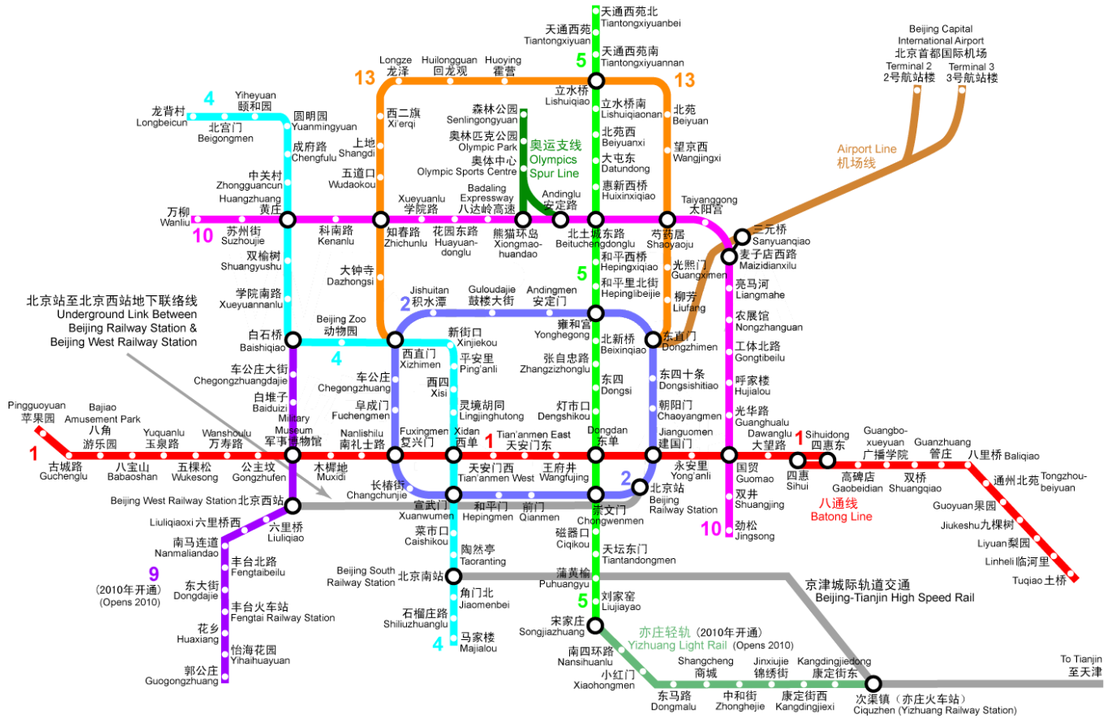


Figure 6: Beijing Subway Plan 2008

Although tourism brought Beijing many changes in urban planning, it also brought some negative impacts on other places. Beijing government urged hundreds of factories to move out of city to Hebei province which is north-west to Beijing. This policy relieved Beijing from severe air and pollution so that when foreigners came, they would find the environment not so bad. However, what must be mentioned is that Hebei province since then suffered from the pollution brought by these hundreds of factories. Furthermore, Beijing also transplanted many trees from rural areas to make urban landscape filled with more green color and beautiful. A newspaper once claimed that all the trees of a village were moved to Beijing, and the village looked like deserted. There is no source for me to know whether those places who lost their trees replanted trees. The cases mentioned above shows the power of tourism to change a city when it is connected tightly with a centralized government. Tourism still plays an important role nowadays.

2. Local Planning (City Scale)

-Transportation

If the 2008 Beijing transportation plan is boosted by the Olympic games and foreign tourists, having a meaningful impact on the city development and trip modes of Beijing citizens, then it is worth of introducing some other more regular and normal city plans of transportation which also enhance the bonds between city and transportation.

In the wclass, Aaron and Todd introduced a lot of useful information in doing regional planning, i.e. the difference between CEQA and NEPA, the EIR process, the Long Range Development Plan (LRDP) and many important environmental factors influencing urban planning. Among all these environmental factors, the most important one is the transportation which was the stimulus for NEPA and CEQA. Transportation is such a broad issue that it not only influences the construction of streets and urban landscape but also the methods of travelling.

Figure 7

The recent changes include The Sustainable Communities and Climate Protection Act of 2008 (Sustainable Communities Act, SB 375, Chapter 728, Statutes of 2008) and VMT. SB 375 proposes to reduce greenhouse gas (GHG) emissions through coordinated transportation and land use planning with the goal of more sustainable communities. It also encourages more transit stops and transit priority projects which is good for combining different methods of transportation and mitigating the impact of traffic. The measurement of Vehicle Miles of Travel (VMT) provides planners another way of assessing the sustainability of project and enriches the EIR process. If a project significantly reduced VMT, then it would not be considered as an important factor in the EIR. On the contrary, if a project increased VMT, then it would definitely be regarded as an important factor.

In China, the usual way to solve traffic by government is to widen the street while this widening would also cause the expansion of urban boundary and encroachment of land for other uses. Although it may be assertive to claim that in China traffic results in the rapid urban expansion, it would be fair to say that traffic congestion is a crucial factor in urban planning. However, Berkeley provides a good example of arranging city transportation by adopting multiple ways of transportation, such as BART and biking. Though it still ranks “D” just as common cities in California, I still see its attempt to reduce the impact of traffic without widening the streets. For example, the left turn on Shattuck Avenue west and the divergence of traffic makes the best use of space. What Berkeley government could do to further improve the transportation is to adopt more public transit to reduce the use of private cars.

Another interesting factor is the viewshed which is a more subjective evaluating indicator that may vary from person to person. Normally viewshed would not become an important factor in the EIR process. Even if it became an important factor, like a building blocking the view, planners would usually remove this factor for the projects. However, sometimes if a building or some views become landmarks, or some crucial historic events happen there, then the proposed plans must take viewshed into consideration.

UC Berkeley is exempted from local regulatory rules and environmental laws but it also has to obey many rules which are even more than the rules employed by city government. UC Berkeley also need to work collaboratively with local government on planning and land use compatibility. Most of the downtown building owned by UC Berkeley are planned for replacement. And UC investment can also have a huge impact on downtown landscape and environment. Due to the high renting price in the Bay area, I wish that there would be more construction plans of dorms for international students. However, I suggest UC Berkeley still work cooperatively with Berkeley government to solve this problem because no one would like to hear the complaints of local residents.

2.1 Oakland Transportation Plan

Transportation decisions have a clear effect on land-use patterns since to some extent, roads, streets and highways shape urban areas. Let's take a look at the transportation programs in Oakland City Plan. People can go easily to almost any place in the Bay Area from Oakland. Oakland has careful coordination of the region's most transportation systems-bus, passenger trail, rapid transit and freeway which provide convenience for commuters and travelers. Travelling in Oakland is a simple and easy task. On the one hand, land use patterns and streets have been redesigned for pedestrians and bikers, making Oakland a better place to live. On the other hand, the airport and seaport are thriving, carrying a great number of goods and people to and from various destinations.

Oakland has many on-going transportation improvement projects that are part of city-wide programs, including Neighborhood Traffic Control Program and Signal Re-timing and Maintenance. (Oakland General Plan) The former one implements strategies to reduce traffic speeds and increase safety on streets, especially those horizontal corridors across the city from east to west. The program also includes stop signs, barriers, speed bumps and increased enforcement. Its success could use be to prove the future renewal of the city, and adaptations suited to address additional traffic issues.

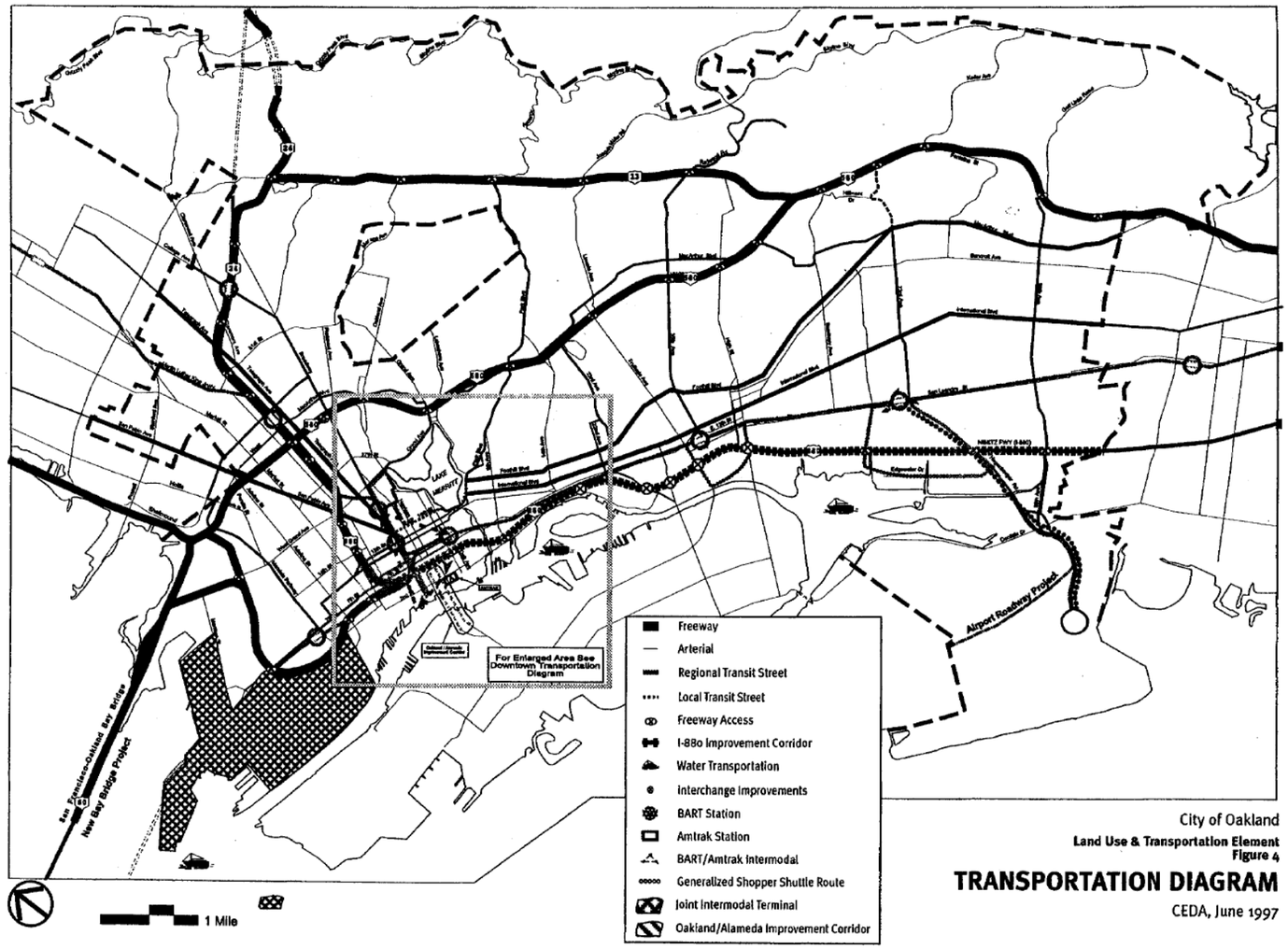


Figure 8: Oakland Transportation Diagram

2.2 Chicago Transportation Plan

To take full advantage of Oakland's position as a major West Coast transportation hub, Oakland integrate transportation and land use planning at the neighborhood, city and regional levels by developing transit orientated development, when appropriate, at transit and commercial nodes. (Oakland General Plan) It also provides a mix of mobility and accessibility by developing road system and traffic demand management system.

Figure 9 Bicycle Facilities

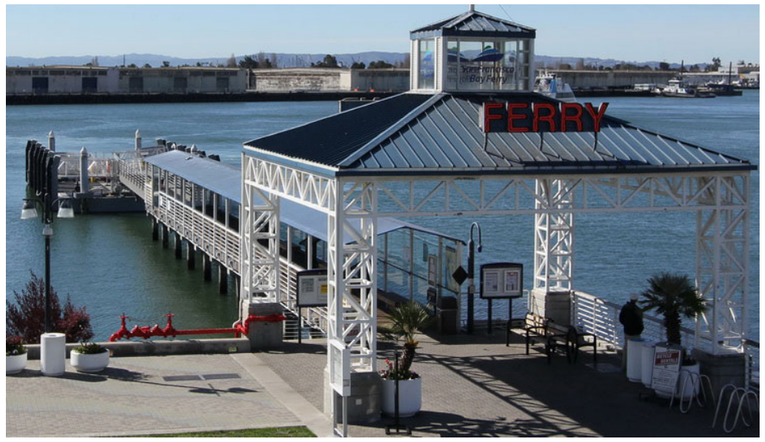


Figure 10 Ferry Port

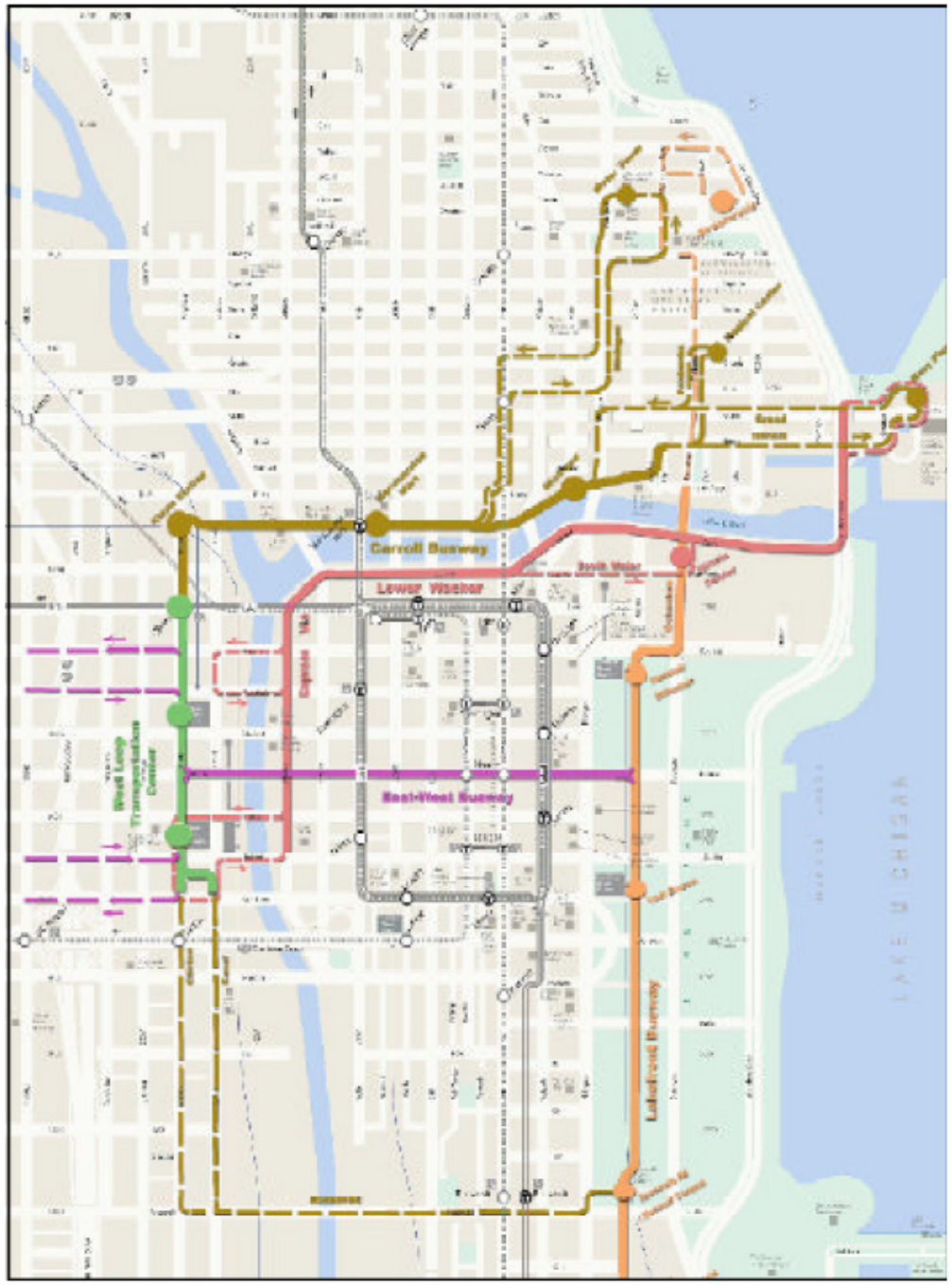


Figure 11 Chicago Future Transit System

This Central Area Transportation Plan is mainly designed to help reduce the congestion of traffic and offer rapid circulation. Planners want to modernize and enhance the transit systems to improve accessibility and comfort.

"Buses are relatively inexpensive and flexible and will remain an important element of the downtown transportation system. To ensure the continued viability of the bus system, many Loop-bound routes could operate in dedicated transitways, either at or below grade, in the Central Area. The proposed exclusive transitways will provide essential service to CTA and Metra stations. On heavily traveled routes it may be desirable to use high-capacity "bus rapid transit" (BRT) vehicles. BRT vehicles can carry as many as 120 passengers - more than double a standard bus. BRT vehicles use multiple wide doors and low floors to permit fast boarding of passengers who have previously paid their fares at a transitway station. Ultimately, the transitways may be served by light rail. " (Central Area Plan)

A qualified and successful transportation and transit plan can change citizens' life in many aspects. It improves the efficiency and speed of transportation, saving commuters time on trip. By providing multiple transitways and transit nodes, lower costs for both government and citizens are produced in this process. Since there are more public transit systems for people to choose, a great deal of fuel is saved while less air pollution and carbon dioxide is emitted. The two cases of Oakland and Chicago prove how good transportation plans can affect highways, urban form and commuting patterns.

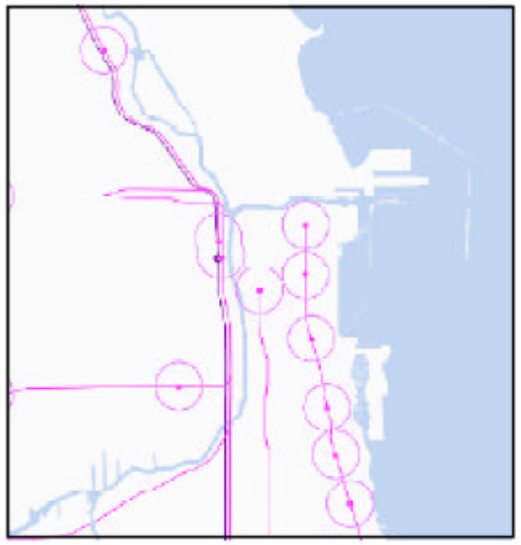


Figure 12 Metra Commuter Rail

Figure 13 Service area of CTA Station(within 5 minutes)

Figure 14 Preserving Rights-of-way

Figure 15 Connections to All Modes

3. Ecological Resilience, Water Management And Waterfront Planning

In Adger's Ecological and Social Resilience, he mentions three ways to measure the resilience of a system. First is the amount of disturbance a system can absorb while it can still maintain its current functions and structure for future users. Sustainability is based on the goal that current usage of resources will not compromise the resources that future uses can manage. The loss of resilience will cause irreversible changes with damage of ecological and social functions. Second is the ability of a system to self-organize. The last one is the capacity for learning and adaption. Resilience is an element of sustainable environment which is being currently understood by social and ecological sciences.

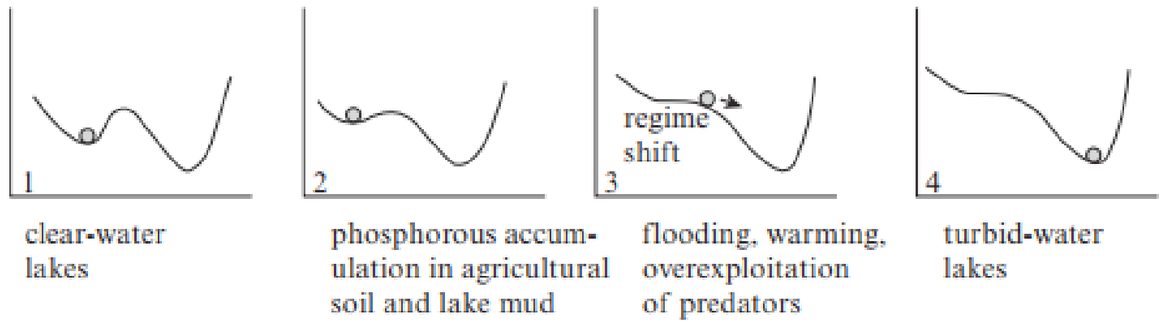


Figure 16

The resilience of an ecological system is more important to the functions of the system than the ability to maintain a steady ecological system. It is interesting that resilience is more like the ability that an ecological system can self-recover and maintain its functions after it has been affected by either natural disasters or human pressure. People cannot simply scale up the management solutions when the scales are increased. The charts on page 5 are inspiring enough for readers to see the relationship between resilience and the possibility to change under different stimuli. When ecosystems are influenced by human use which may be over-exploitation or pollution, the former steady state will be more easily to change. The resilience will go up but it is an illusion and more likely to change if negative human use continues. It will finally arrive at a certain lower point which means its resilience has been weakened, and the system is also stable now. This case indicates ironically that a dead ecosystem can also be resilient.

I strongly agree with Adger's statement that the resilience of an ecosystem cannot be separated from human activities which can either exert inappropriate influence or help maintain the resilience. Periodic changes brought by economic development may cause the loss of productivity. Losing resilience is irreversible, impairing positive values attached to the environment. Loss of resilience may convert environment to an unfamiliar one which would add cost for management. The most common example in reality is desertification. Regardless of natural reasons such as climate change or volcanic eruption, the process is often caused by overgrazing, cutting trees and unsuitable farming techniques. When the original woods or grassland becomes desert, it is difficult for people to recover it to what it used to be. Adger not only mentions economic development, but also cultural context and the features of social organizations, like trust and network. Integrated conservation and collaborative resource management may help reduce the vulnerability and increases the resilience of ecosystem.

I object his opinion that changes in most ecosystems is not gradual but rather is triggered by external perturbations. It is a complicated issue which should not be asserted or not giving any precondition. In this sentence, the first contrast he makes is gradual and periodic. And the second is gradual and external perturbations. I do not see much connection between them.

Urban land use planning also has a huge impact on the ecological resilience since it is one of the major factors which are connected with environmental issues like water management and deforestation. By affecting the space and quality of rural or natural environment, it has influence on the number and varieties of species. Meanwhile, if a city's environment is considered as a whole, the distribution of different urban land uses could also alter the economic development, people's mentality and the potentials of a city.

It was astonished for me to see the statistics like that by 2050, global water demand is projected to increase by 55%. Poverty and social equity limited billions of people to obtain clean water for a family's health, agriculture and family-run business. Personally speaking, unfair and extremely limited distribution of resources is the main challenge in dealing with environmental problems. This unfair distribution lies between developed and developing countries, rich and poor, men and women, and adult and children. People overexploit their local environment is mainly because of overpopulation and limited access to enough resource. It is worth mentioning that I do not advocate that fair distribution of resource should happen immediately. People should be well-educated and the social context should also be aware of sustainable development. Only in this situation can the fair distribution be efficient.

One important example of how overexploitation and unplanned water management plan would lead to a series of terrible results is the Nile Delta. The major challenges that Nile Delta is facing include costal erosion and subsidence, the compacting of the delta soil. Since the dam blocks the sediments from upstream, the whole delta is sinking while some areas close to the Mediterranean coast is sinking by a centimeter per year. Meanwhile, the rise of Mediterranean Sea level will cause the loss of one-third of the delta by 2050. In addition, since there are more than 50 million people living on the delta, the farmers use the water so efficiently that the Nile cannot reach the sea. Another challenge is the megaproject which transports 10% of the Nile to Toshka where people may not consider as a proper habitat to live. Other challenges contain the shrinking of fishery and limitation of data and maps. Consider the complex dilemma the Nile encounters, the three guide lines I promote are:

1. Take different factors into consideration while making a plan for the future. Although building the dam was not a smart move, it is less likely to simply remove the dam right now. Therefore, when implementing the megaproject, the government should think more about influences on different aspects.

2. Give scientists access to the data, allow them to participate the process of environmental management and listen to their advice. It would never be wrong to consult professionals.

3. Adopt more adaptive management in dealing with the restoration of shoreline. Come up with more applicable solutions rather than encouraging rice cultivation.

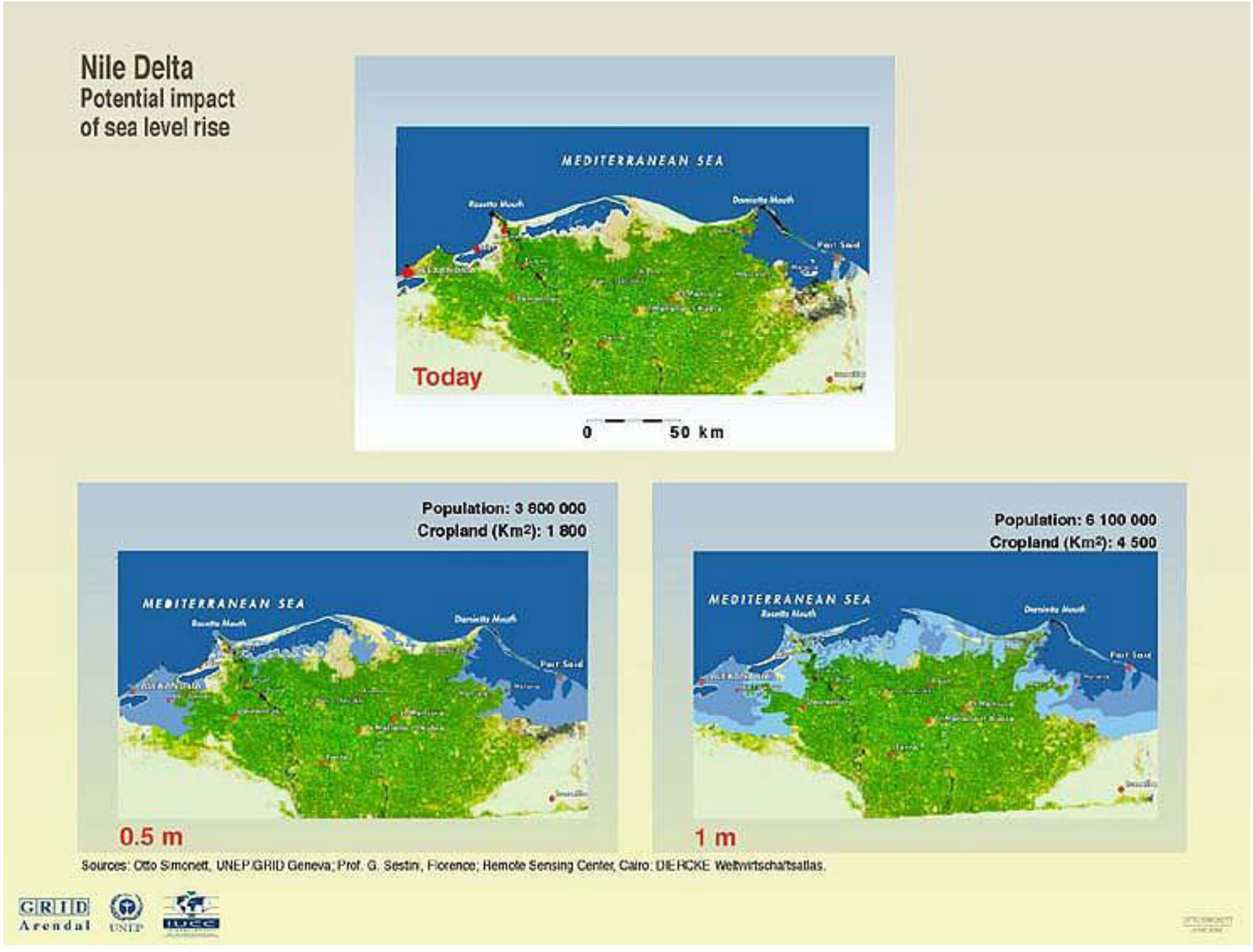


Figure 17 Nile Delta Sea Level Rise

The increasing population, rising sea level and more urgent agricultural and industrial need for water not only requires better water management but also more reasonable planning of water. Water front space plays an important role in the water planning since a good plan will provide better accessibility, views and accommodation for citizens. In Chicago, open spaces and rich landscaping help Central Area attract business and visitors and make it more comfortable. Let's take a look at the planning program in Central Area Plan.

"As the Central Area grows, new open space and parks will be required. Access to green space is a basic human need. It is particularly important in the Central Area, where most streets lack the grassy parkways and yards of outlying residential neighborhoods. Downtown parks provide beauty to the hundreds of thousands of people who pass through the Central Area every day. They soften the urban environment and make downtown Chicago a more desirable place to live, work, and visit. The Central Area cannot accommodate the same amount or types of open space as other parts of Chicago. There are fewer families with children, but more visitors and workers. The downtown open space system and the design of individual parks will reflect these unique needs and provide access to a park or open space within a five-minute walk of everyone living or working in the Central Area. The Central Area will also reflect Chicago's high standards for the design and quality of public open space." (Central Area Plan)

My favor of this plan is that all the waterfront spaces are combined with open space. With the open green space formed in the line along water, an artificial ecological corridor is built. Biodiversity, beautiful views and water accessibility are all achieved in the waterfront space.

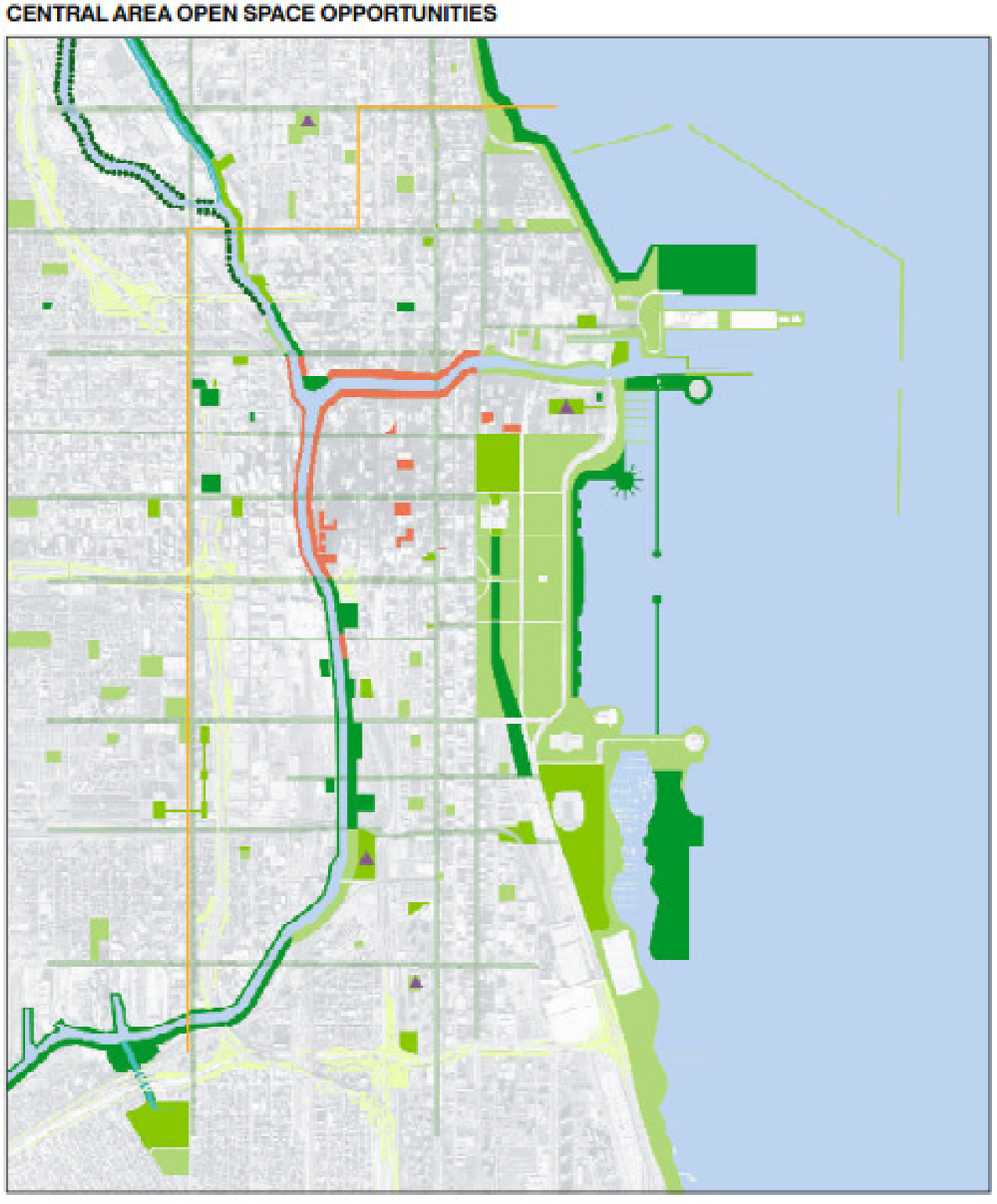


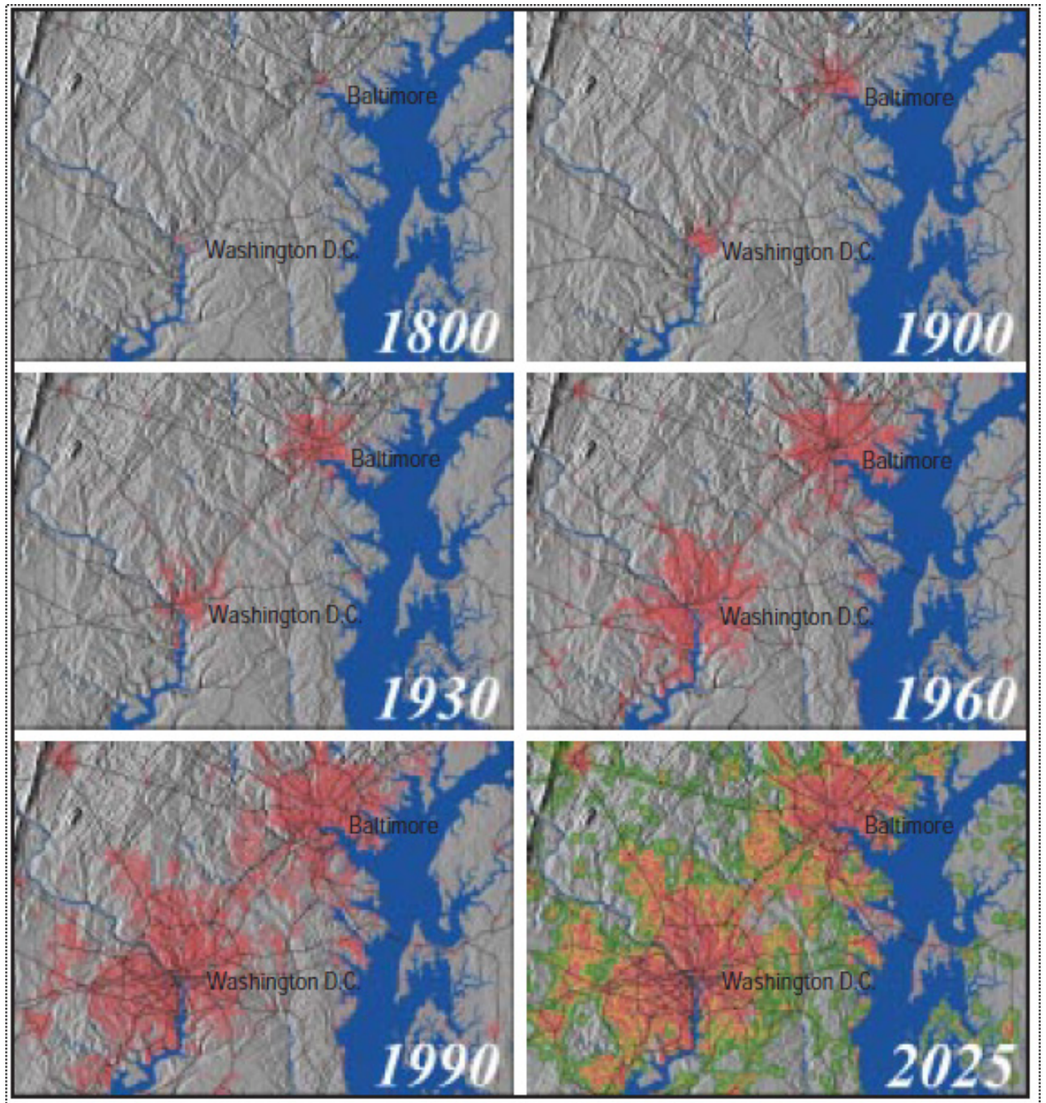
Figure 17 Central Area Open Space

4. Urbanization Process, Deforestation and Vegetation Recover

The two determinants that Tom Rough claims are rural migration into urban and city's expansion into natural habitats. First, when rural migrants adopt city lifestyle they tend to use more resources since their incomes rise. The most illustrative example of the resource is the meat consumption. The great meat consumption would in turn causes farmers or agriculture corporations occupy the land which could be used for other functions, to produce animal products. This land clearance could either happen in migrants' own country or globally. Second, city dwellers increase at a surprising rate every day, and the urban land area expands at an even higher rate into natural areas. Urban expansion destroys animal habitats and impairs the biodiversity. Also, it occupies the agriculture land which is driven to clear the land of forest, which caused more deforestation than it seems like.

Barbara Torrey in her passage also claimed different consumption patterns between urban and rural areas have a big influence on the environment. Urban populations not only consume more animal products, but also more energy and dual goods than rural populations. The environmental effects of urbanization cannot be seen from a single perspective but from a multiple one so that we can make a more accurate assessment of its effects. Besides, she mentions that although urban fertility rate is lower than that of rural areas, the rural immigration and the urban increasing population still contribute to the deterioration of environment. However, the lower fertility of urban is likely to slow population growth globally while it is also likely to create some environmental problems in aggregation.

Since the environmental impact of urbanization is not a single problem of rural-urban migration, I would recommend multiple methods to slow this deforestation process. Increasing the income of rural populations is effective to reduce the gap of wealth between rural and urban areas. Most rural people who migrate to urban seek for more income to obtain more resources, fancy lifestyle and education opportunities. Therefore, there is a need to enhance the salary, fundamental facilities, school education and health care of rural areas. However, this method may not be easy to implement. The diverse population in the city provide more opportunities and ways to build intensive facilities, corporations, buildings, restaurants and hospitals, and exchange their ideas. Without enough intellectuals and funding, it may be difficult for rural areas to reduce the gap. Besides, it is hard to tell if rural populations became rich they would not follow the city lifestyle and change their consumption pattern.



This series of maps shows more than 200 years of urban growth in and around the Washington, D.C. area. The background in each map is a shaded-relief image. The red areas represent urban extent for each time period and the blue is Chesapeake Bay. Projections for 2025, made with a land use change model, show likely areas of new urban growth in yellow (high probability) and in greens (light green is moderate probability; dark green is low probability).

Figure 18

It seems like only through the alterations of social and cultural context this process would be reduced. When I came to America, I was impressed by the conception of recycling deeply rooted in people' s mind and the number of vegetarians who insist a healthy and harmless diet. If people's opinion of consuming more energy and resources could be changed by education and propaganda, they would follow the right way more conscientiously without being lured by benefit.

The urban factors not mentioned in the articles are the increasing production ability, globalization and people's desire of engaging with others. Increasing production ability provide more resources, food, energy and building constructions for the city. Since agriculture does not need as many labor as when it used to need, people choose to work in other professions. Although Rough mentioned trans-border transactions, what is ignored is that globalization brings the ideology of urbanization across the world from developed countries.

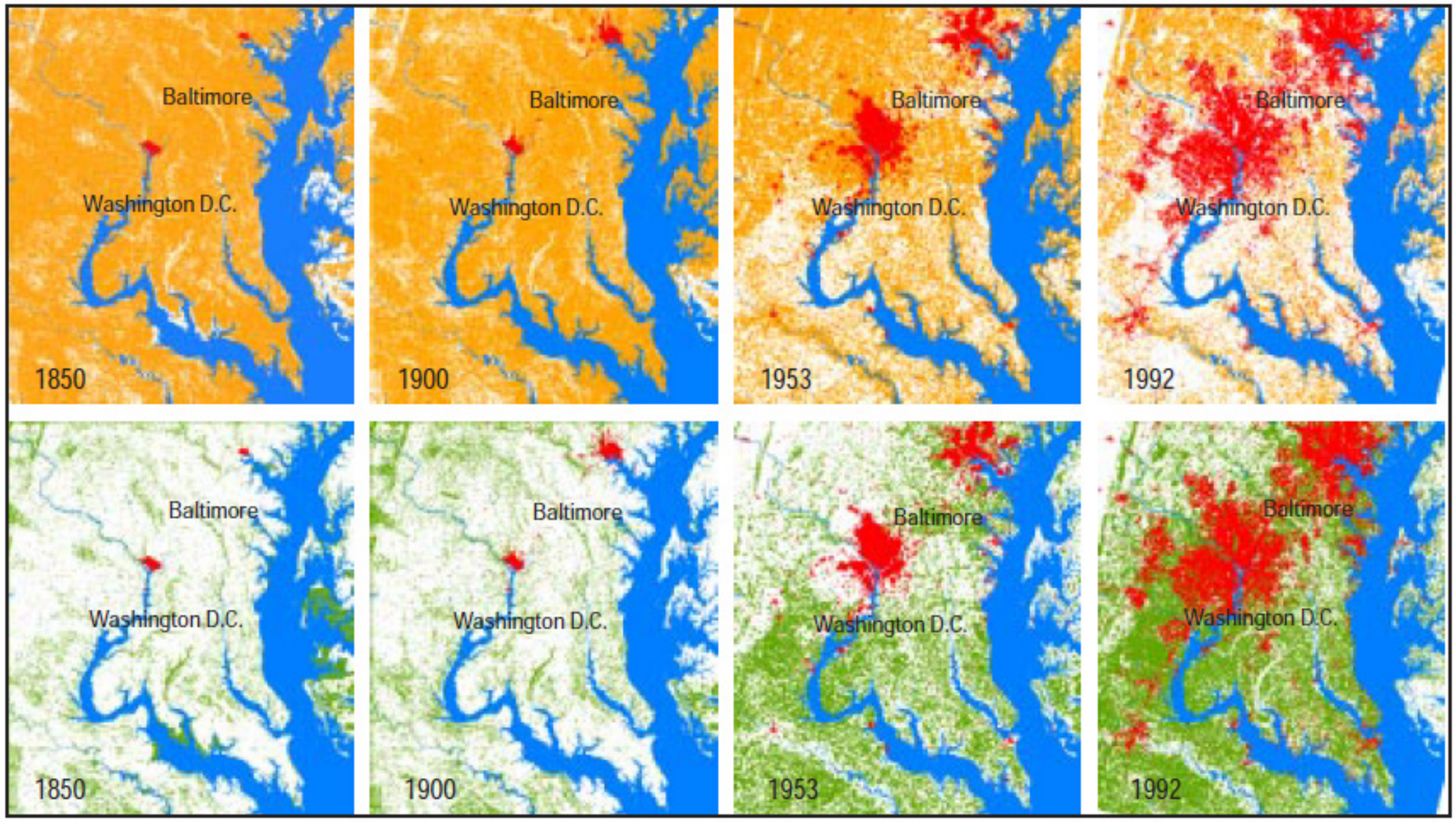
4.1 Urban Land Use Change

"The geographic understanding of land use change in urban areas is a key aspect of the UDR program. By analyzing a temporal database for spatial patterns, rates of change, and trends, the UDR program can provide insight into how cities have developed under varying social, economic, and environmental conditions.

This analysis requires understanding a region's land use history. Population data, timelines of historical events, and related information are all used to explain the mapped changes. Population data are correlated with the temporal database so that human movement can be tracked and factored into these interpretations. Population increases suggest economic growth and the availability of jobs in an area, and population declines suggest a decline in livability or economic issues that cause people to leave a region. Timelines of past events and other historical compilations aid in identifying the issues that affected the development of the region." (USGS)

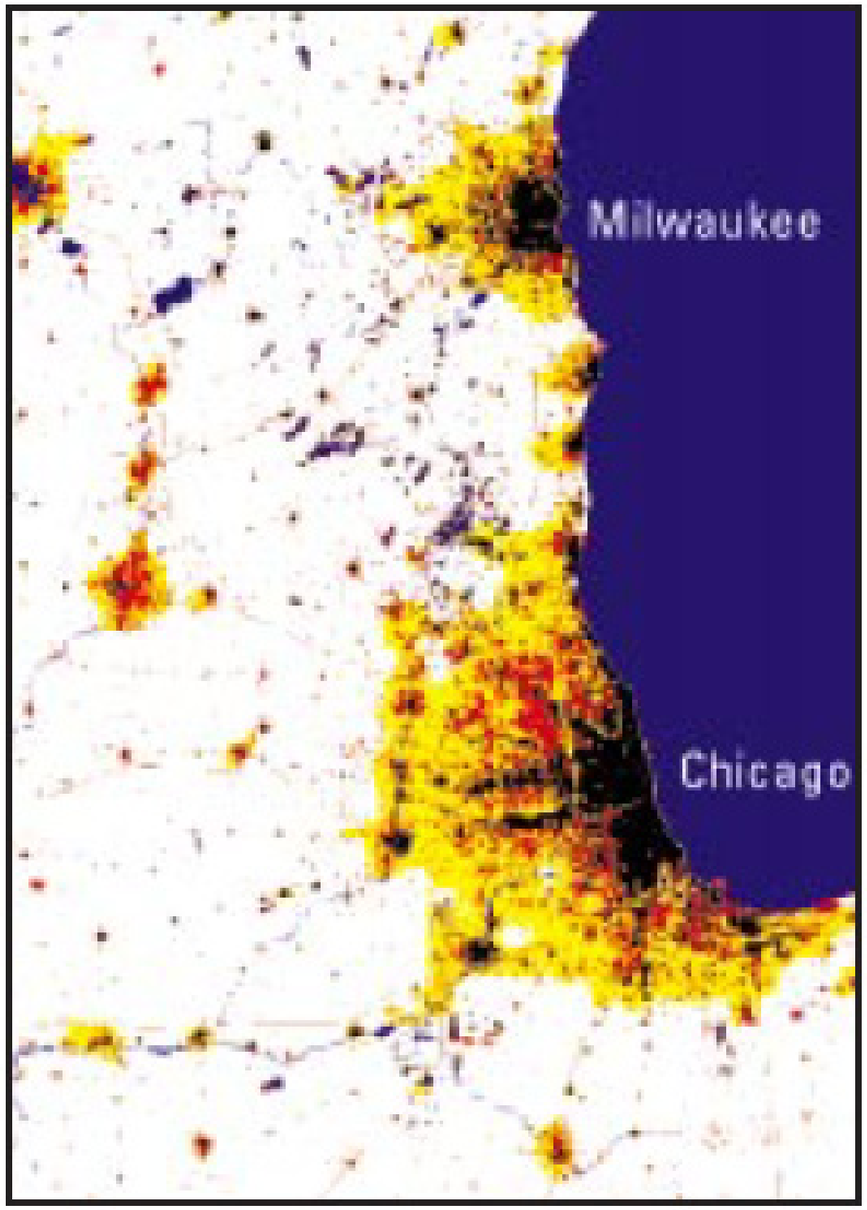
So what is the connection between urban land use change and environmental planning? Why should people know urban land use patterns and the impact of their change? Learning urban land use change gives people a better understanding of a region's land use history. Timelines of historic events, population data and related information all can be viewed in the map changes. Urban expansion suggests economic growth and the availability of jobs in the certain area. Population declines implies a decline in livability and economic crisis that forces people to move to more developed areas.

Environmental planners should have a physiographic understanding of the place and the greater region surrounded. Without knowing the social and historic context, planners cannot develop a fully reasonable knowledge of the place and make the best plan. Climate, topographic features, adequate supplies of water and other natural resources are constraints or prompts of a region's development. The numbers of trees and vegetation predicts the quality of environmental protection and people's environmental awareness.



This series of maps compares changes in urban, agricultural, and forested lands in the Patuxent River watershed over the past 140 years. The top series shows the extent of urban areas (red) along with agriculture (gold), which was at its peak in the mid-to late-1800s. Since 1900, the amount of agricultural land has declined as urban and forested land (green) has increased.

Figure 19



This preliminary interpretation of urban land use change for Chicago-Milwaukee shows urban growth in 1955, 1975, and 1995. Each time period is represented by a different color. Black shows the extent of urban growth in 1955, red represents 1975, and yellow represents 1995.

Figure 20 Urnam Expansion of Chicago

The findings drawn from studying urban land use change can be used to analyze the causes of urban congestion, pollution, and loss of natural resources. The impacts of these can be connected with the changes of urban, agricultural, forested lands and transportation systems. Learning to use the data of urban dynamic changes, environmental planners can develop land use zoning plans, evaluate environmental impacts and delineate urban growth boundaries. . For example, traffic congestion which is a major outcome of urban growth, is often caused by outdated transportation infrastructure and increasing population. Solutions and plans for traffic congestion may be obtained from analyzing the trends associated with urban land use change. Moreover, the geological data of land use change can help landscape architects evaluated the feasibility of building materials, such as sand and cement.

5. Social Justice and Equity in Urban Land Use Planning

This chapter will introduce the roles of social justice and equity play and the ways of achieving them in urban land use planning. As a large portion of the world population live in the urban area, just like what has been mentioned in the second chapter, one of the most important social justice issues that citizens and government have to face is urban land use planning and transportation. This chapter combines two weekly posts which are both tightly connected with social justice, and case studies of Oakland and anti-PX movement in China.

Diversity is one of the most important features of Environmental Movement (EM) as well as New Social Movement (NSM). The constantly changing Environmental Movements' boundaries make it hard to define them accurately. When it comes to the campaign level of EMs, even the same EM in one country often have different organizations, structures or supporters in different regions. NSMs and EMs both involve in many new dimensions of identities. It usually happens in the minority worlds since people there hold various beliefs and values. As to EMs, each group may possess differentw goals and advocate different methods of achieving those goals. For example, as Doyle mentioned in his book, the protesters against the expansion of a uranium mine in Roxby Downs, Australia, can be divided into environmentalists opposing nuclear, subservient indigenous people and some who concerned about wilderness value. (2004)

The tendency of transcending the class disassociates NSMs from permanent social class, sex orientation or professions of participants. In addition to this tendency, EMs possess different political philosophies while no center of the movements can be defined by past politics. Some groups may operate with militant actions while others pursue nonviolence protest towards the government or lobby the congressmen to agree on a proposal. However, NSMs apply more radical tactics of resistance instead of "civil disobedience and nonviolence". This is the first point that NSM and EM can be separated because the environmentalists and the environmental movements are non-violent with more peaceful intention. Another difference is that the range of EM is usually constrained to the local level and has less connection with foreign countries. I would argue that NSMs are more permeable to drift through national barriers and more likely to disperse the movement, ideology and form in other countries. For example, the Global Anti-Golf Movement conference in 1993 had delegates from Thailand, Malaysia, Hawaii, Hongkong, Japan, etc. The movement, which aims to inhibit golf industry involving transnational corporations and depriving local agriculture and water resource, broke national boundaries and united people of different nations, classes and beliefs. On the contrast, EMs are described basically under the national level by Doyle. It is reasonable that except global warming and climate change such kind of global environmental problems, most EMs are tightly connected with local environmental issues.

Figure 21 New Social Movement

The movement I choose is the Anti-PX Movement in China, which I would define it as both environmental movement and new social movement. PX refers to p-Xylene, an aromatic hydrocarbon, which is a significant component in the production of terephthalic acid for polyesters. Its global production is estimated to be 37 million tons a year. At the national level, Anti-PX Movement is the most famous environmental movement which only happens in China. From 2007 to 2014, the movement took place for 7 times, mainly along the east shore line of China in different cities, invoking many parades and conflicts between government and civilians. At the issue banner level, it would be intricated to explain whether people opposed the construction of PX factory due to the concern of environmental protection or other reasons like personal interest and grievance of undemocratic government decisions. Although PX itself is not acutely toxic, having been proven safe and stable, people still worried about its by-products in production and kept asking what if the factory exploded. The movement revealed Chinese' distrust of chemical factory's regulations and operations as well as people's concerns for the environment and their own health.

The first campaign took place in Xiamen in 2007, beginning with hundreds of CPPCC members' opposition of PX factory construction. Local people worried about the toxicity of PX and the damage it would cause if the factory exploded. They were also angry that government certified the plan of PX factory construction without hold a public hearing. Tens of thousands of Xiamen civilians gathered in front of local government, wearing masks to show their discontent. Their movement was also supported on Internet by other environmentalists around China. Half a year later the government agreed to move the factory 100 km away. Another sensational campaign happened in Dalian, a famous port city of oil and shipping industry. Before the public hearing of PX program, a major oil pipeline exploded twice in 4 months and polluted large area of the sea. Local people were discontented about the serious environmental problems caused by oil leaking. As a result, they gathered at Civic Square, singing China's national anthem to refuse the enter of PX factory. The local government announced to move the factory away on the same day, but refused to disclose location and time. Another campaign happened in Ningbo. Villagers was unhappy about resettling fee of a chemical factory program. When they found out that part of the chemical factory's function was to produce PX, they blocked the roads for entire two days. The common features of all these Anti-PX Movements are that they happen very fast without specific leaders. They usually end with local government's compromise of moving factory away while people in other province still have no idea about them. However, moving factory away does not solve the real environmental problems. It is more important to formulate safe regulations of factory's operation while government should be responsible for disclosing information clearly and building strong public trust.

Figure 22 Anti-PX in Xiamen

Figure 23 Anti-PX in Kunming

Anti-PX movement suggests the great concern of citizens for industrial land use, especially those producing toxic chemicals which would cause terrible results if explosion happens. Public hearings should be held and advanced notification should be informed to all the citizens who may be affected. It is worth mentioning that all these failed construction plan do not fail in fact. These factories were just moved to remoted areas or small towns where newspaper usually do not report. In some way, it is a new kind of social injustice for people living in those areas.

5.1 Urbanization and Transit Planning

Harvey claims that city arises through the concentrations of surplus products. Capitalists produce surplus products in order to gain more benefits and they would reinvest these products to create more surplus value. The most profitable and low-risk terrain for capital-surplus investment is the urbanization which reshape the politics of capitalism. In 1848, crises of both unemployed surplus capital and surplus labor which struck Paris hard also provoked a potential revolution consisted of surplus labors and utopians who saw socialism as an opportunity to solve social inequality. Louis-Napoleon Bonaparte took a series of actions in domestic economy including improving railway network, building ports and roads to help repress the revolution. He appointed Haussmann to "take charge of the city's public works".

Haussmann was clearly aware of that only through urbanization he could help Paris resolve the political revolution and the surplus of products and labor. He enlarged the scale of the utopian plan of rebuilding Paris so that the urban construction of Paris could absorb huge quantities of labor and capital, as well as suppressing the desire of political revolution. Harvey believes that through the absorption of labor, capital and products, urbanization provide capitalists a guaranteed safe way to invest and gain more profit. In addition, the labors would find jobs for living which suggested that they would not take risks for the revolution which might or might not bring them a better world. That is why Haussmann asked the architect to triple the width of boulevard because the larger scale would lead to more consumption. This relative stabilized urban economic system also created possibility for the new financial institutions and debt instruments for urban infrastructure. The process which upgrades the infrastructure system of city also builds a better urban environment for city life and tourism. Paris became the great center of consumption, cafes, luxury stores, bourgeoise class, tourism, pleasure and consumerism. consumerism.

However, Harvey also notes that the endless expansion of financial system and credit infrastructure would fall into failure. The crash because of which Haussmann was dismissed is another instance of the excesses of capitalism. The financial crisis suggested that if we chose to accelerate the urbanization instead of following the rule of it, the financial system would finally collapse. Moreover, this acceleration of urbanization evoked people's nostalgia for the former state of Paris and their desire of restoring it to the original phase. The urbanization boosted by capitalism would make people cherish the historic meaning and landscape which they failed to protect. Spatial injustice in Harvey's article is more related

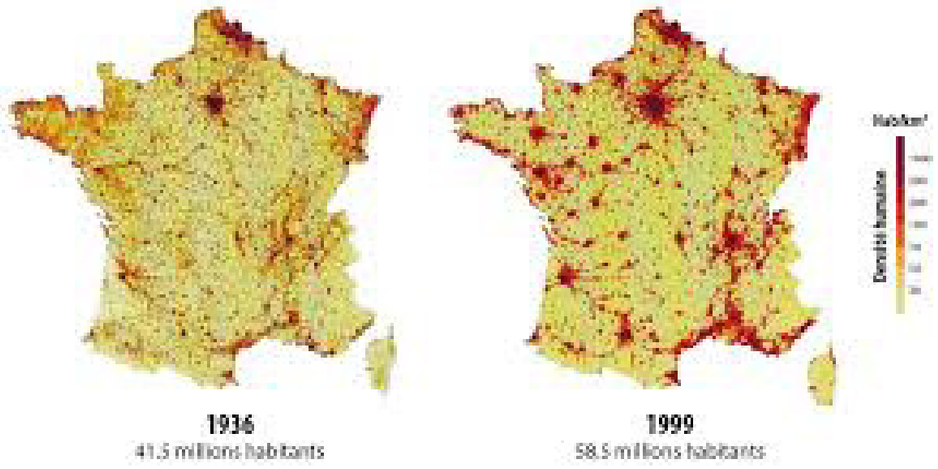


Figure 24 Urbanizing France

to the example of New York in which city center was hollowed, and African-Americans were denied access to the new prosperity.

The most important factor that Soja believe drives social injustice is the geographical patterns. The patterns are internally just/unjust as the product of social (in)justice or as the processes that produce social (in)justice. He further illustrates that created through bias on certain populations, the locational discrimination is fundamental in social injustice. Race, class and gender are the three significant factors in shaping the discrimination. As a student from Jiangsu Province where spatial discrimination is the most severe in China, I also want to add the economic status, historical context and accesses to resources to the major forces. Divided by Yangtze River, the southern area in Jiangsu is much closer to Shanghai and has more fertile land since the river flushes nutrients from upstream and deposit them on the south side. The southern people in Jiangsu discriminate those in northern part who are much poorer and have limited access to ports, investment from Taiwan and foreign countries. Different towns in southern area discriminate others due to local languages and differentiated histories. The geographic pattern is undoubtedly the most important factor in shaping social injustice.

The political organization is also one important factor which ranges from "the gerrymandering of electoral districts, the redlining of urban investments, and the effects of exclusionary zoning to territorial apartheid". The inequality in political right allocation reduces the possibility of making sure that everyone's voice could be heard. Moreover, the redistributive injustice referring to the redistribution of real income in favor of rich over the poor would increase the spatial injustice since the wealth is distributed to the minority. This phenomenon is most obvious geographically in the comparison of houses in suburb areas and slums in the city center.

I would rank fair share cities as the most effective method for sustainable development of cities. It attracts me by its institutional transformations that connect degradation of environment with repairing or compensating this damage. I appreciate its mechanism of compensation since the globalization has spread the pollution and waste from a certain region to all the corners of the world. Even dealing with local degradation of environment is no longer a regional topic. Self-reliant cities would be ranked as the second appropriate approach. Self-reliance of the city implies a self-cycling system of resource and waste is established. It would "reduce the overall resource consumption; minimize waste streams; and deal with pollution insitu rather than send it to other regions".

Redesigning cities is a good approach to improve the poor design of the urban fabric and reduce the energy consumption. However, it implies that it should have as many architects as possible to make design plans to promote higher residential densities or foster mixed land use. It costs too much funding and time which may only happen in developed countries. In China, this redesigning process is always taking place for better urban environment but it also results in waste of resources and energy. Externally dependent cities is not a feasible way to develop a sustainable system of cities. That rich cities transfer their waste and environmental problems to other regions is an irresponsible approach when the earth is facing serious environmental issues.

The way we design our community or build urban areas in terms of urban land use planning and transportation has an important impact on the social justice, equity and the environment. Comparing the land use which is more intended for public transit, walking and cycling to the land use that is favorable of personal automobile, it is obvious that the first one is more inclusive that all the people can use its service, while the latter one is only suitable for individuals those who can drive. Personal automobile needs more space of streets and parking, reducing the availability of public space.

The construction of land use for private automobile requires a tremendous amount of resources that is finite could be used to serve more people. For instance, according to Jean Mercier(2009), building an automobile require more than 500,000 liters of water for the mining of the metals, painting of its body and different cooling devices. In addition, increasing personal automobiles require more land to build parking structures and increase emission of carbon dioxide, not to mention the waste of metals.

One feasible solution to this problem is that government investing more in building mixed land, use, "creating multipurpose corridoes of commercial, residential, and leisure activities", well served by modern, public transit. (Mercier, 2009) We shall not make compulsory but make it optional for most citizens. The processing of building more public transit may take a long time, but it would not deter us from doing the necessary.

"Because of the potential for significant offsite impacts, most areas designated for General Industry and Transportation areeither located adjacent to the Business Mix or Housing Business Mix areas, with the intent of buffering impacts from primary housing areas to the greatest extent possible." (Oakland General Plan-in Action)

Figure 25 Oakland Transportation Implemention Plan

List of Oakland Transit Programs in Acrion

Policy N1.2 Placing Public Transit Stops.

The majority of commercial development should be accessible by public transit. Public transit stops should be placed at strategic locations in Neighborhood Activity Centers and Transit Oriented Districts to promote browsing and shopping by transit users.

Policy N5.1 Environmental Justice

The City is committed to the identification of issues related to the consequences of development on racial, ethnic, and disadvantaged socio-economic groups. The City will encourage active participation of all its communities, and will make efforts to inform and involve groups concerned about environmental justice and representatives of communities most impacted by environmental hazards in the early stages of the planning and development process through notification and two-way communication.

Policy N8.1 Developing Transit Villages.

"Transit Village" areas should consist of attached multi-story development on properties near or adjacent to BART stations or other well-used or high volume transit facilities, such as light rail, train, ferry stations. or multiple-bus transfer locations. While residential units should be encouraged as part of any transit village, other uses may be included where they will not negatively affect the residential living environment. (See discussion of Transit-Oriented Districts in the Transportation section in this chapter.)

6. Climate Change

The fact that Ethiopia is a leading developing country in learning the importance of green infrastructure does not contradict with their lack of preparation to boost the resilience with their countries. Constrained by the resource, less supervision of administrative management, request for funding and urbanization trend, the poor situation of Ethiopia could be recognized when studying its urban planning. It is under this circumstance that inter-governmental cooperation and interdisciplinary approach should be incorporated together to deal with climate change.

The inter-governmental cooperation has two different meanings considering the scale of the government although both of them are very important in dealing with climate change or other critical issues in urban planning. The first which Gondo rarely mentions in his article is that two or more different national governments should have cooperation in handling transnational or global climate change like global warming which could affect shorelines of all the countries with marine territories.

The other is the cooperation between different levels of governments. For example, The Ethiopian National Urban Planning Institute (NUPI), Environmental Protection Agency (EPA), the National Disaster Planning Unit and National Adaptation Programme of Action (NAPA) should be defined with clear obligation and cooperate together to deal with inter-regional climate change. In addition, the cooperation of municipal governments is sometimes even more significant is solving some environmental problems. If contaminants come from the upstream of a river, the government of downstream should coordinate with the upstream government to find the source of pollution and recover the river. However, it is a pity to see that most municipalities are in favor of stand-alone adaptation measures opposing an integrated approach because it allows for verifiable use of new and additional funding. The inter-governmental cooperation plays a pivotal role in solving climate change from a whole perspective and actually saves money and resource.

Norman states that multi-disciplinary approach that integrates science and urban planning is crucial in incorporating the preparation for climate change within the process of land use planning. I fully agree with him because we have seen too many examples of urban construction projects without consideration of ecological system or human feelings. Skyscrapers have big influence on adjacent environment. They change the direction and speed of wind as well as blocking heat dissipation. Glass windows cause a great deal of light pollution.

Under an age which encourages cooperation and information sharing, ecologists, urban designers, landscape architects and urban residents still lack a strong partnership to establish an interdisciplinary approach to explore better urban landscape and a strong interest in learning the virtues of other. It is good to know that people are gradually conscious of the importance of climate change. Besides, architects, landscape architects and urban designers in West Europe and America have intentionally created more green space in the city building. Economic growth and education are two most important factors in shaping the thought of having more green infrastructures. The former provides with resource and money to implement it while the latter changes the concept of urban environment.

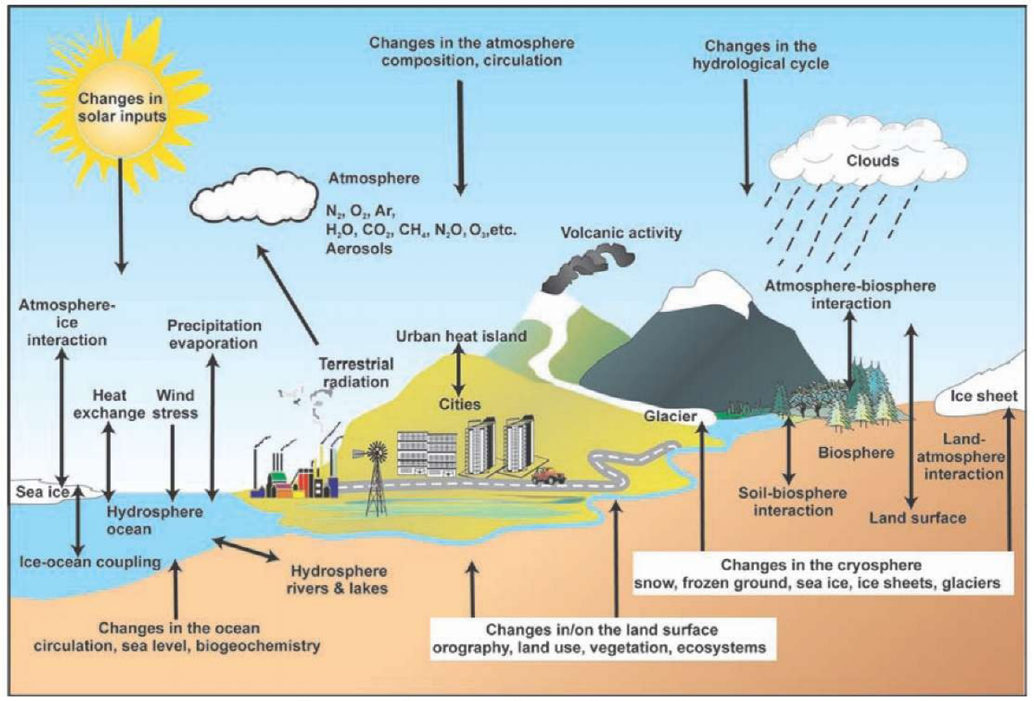


Figure 26 Imapct of Global Climate Change

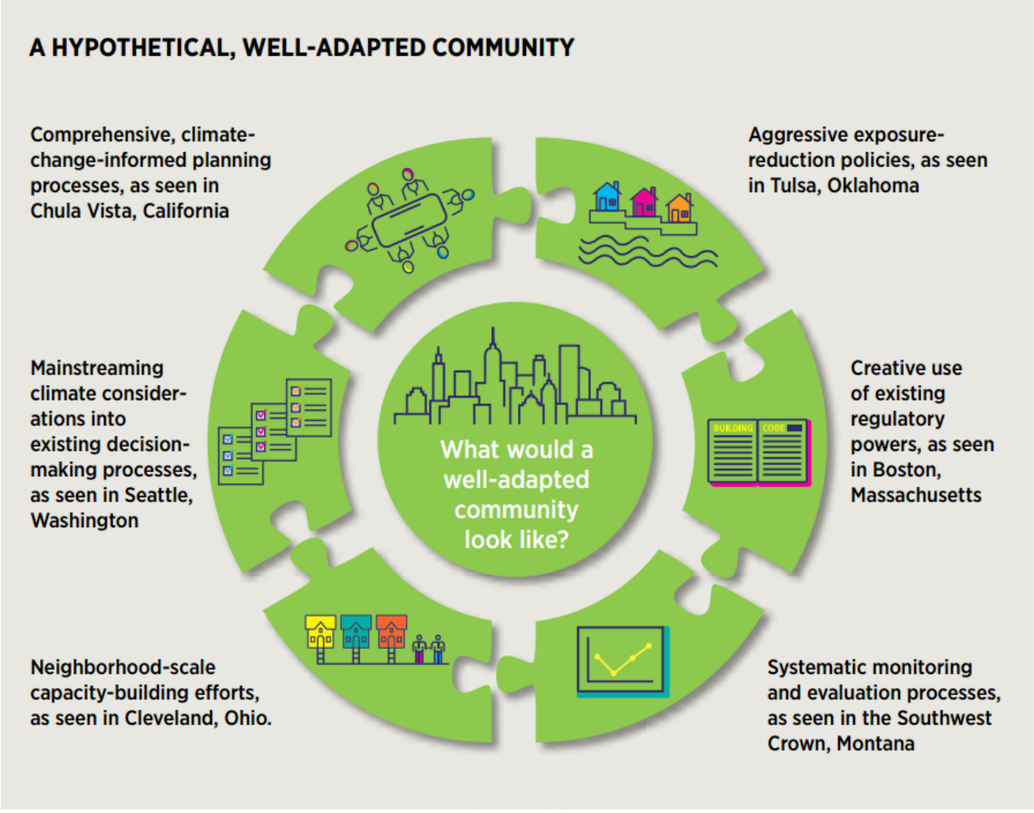


Figure 27

Local, regional, and global climate are all affected by urban land use and urban land cover changes. Future patterns and decisions of urban land use, together with the climate changes, will have a huge impact on ecosystems and human communities. Continued population growth will result in the changes of urban land use and urban boundary expansion. The increasing area of houses depend on "household size and how concentrated urban development will be". (Land Use and Land Cover Change) Meanwhile, high population growth rate suggests more area is converted from forested land or grasslands. The urban land use planning can mitigate climate change by expanding forests to "accelerate removal of carbon form the atmosphere, modifying the way cities are built and organized to reduce energy and motorized transportation demands". (Land Use and Land Cover Change)

So how should we modify urban land use patterns so that they can be adapted to observed effects of a changed climate? These modifications should be either encouraged or ordered by government, or undertaken by stakeholders. Land use decisions are not only made by biophysical environment, but also by government, markets, laws and politics. Government, as the leader of a polity and also the leader of changes, should cooperate with companies and stakeholders, emphasizing the role of climate adaptations in land use decision to reduce the impacts of severe climate events such as sea level rise, etc.

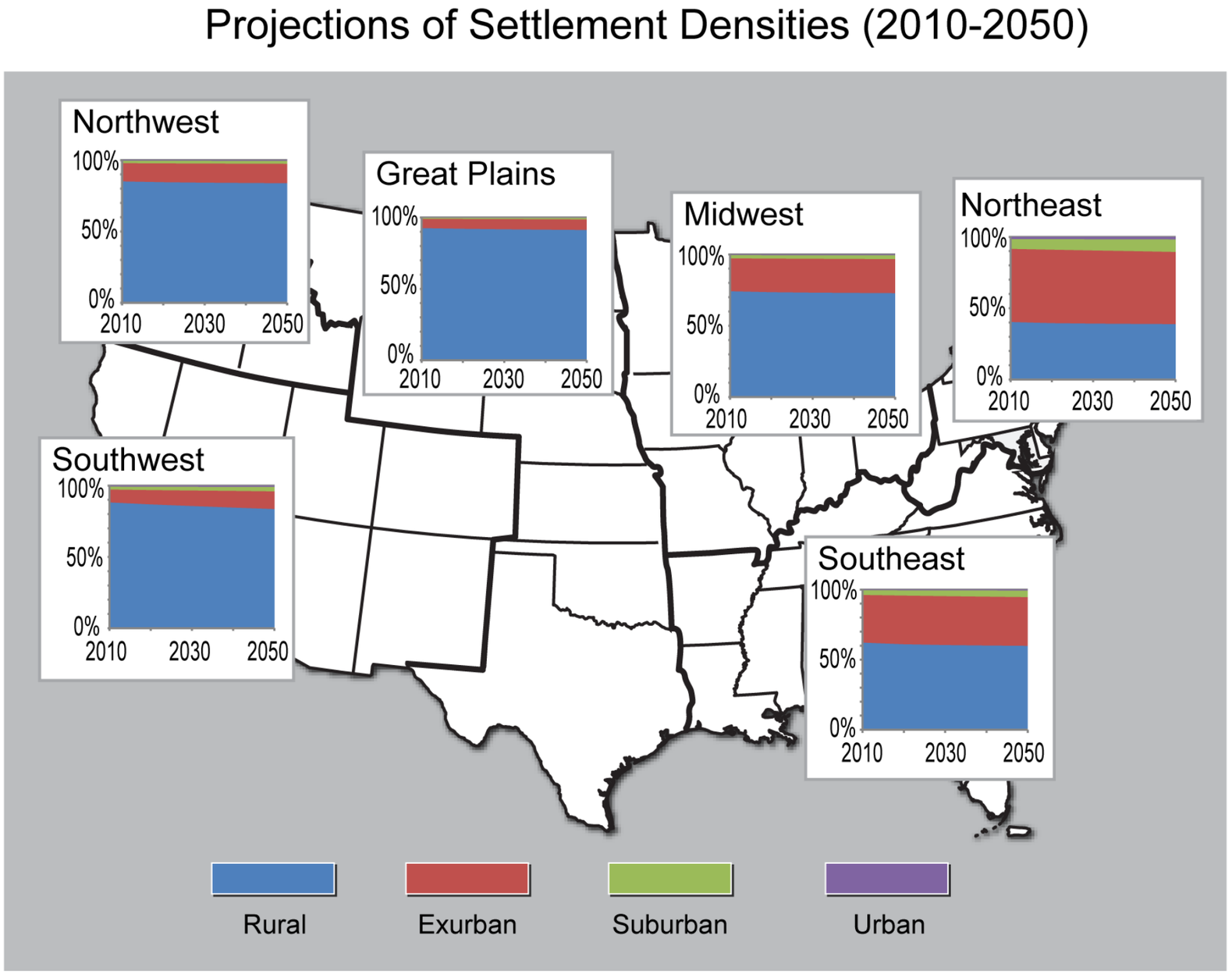


Figure 28

Conclusions

The first declaration of landscape architects in 1966 encouraged people who shared the same concern of American environment to join the small group of landscape architects. Their duties defined in the declaration not only included good plan of landscape, but also express an attitude that landscape is rooted in natural science and essential in maintaining the vital connection between man and nature. As what has been mentioned in the first sentence, the ultimate goal of landscape architects is to improve the American environment. Landscape architects are also urged to know geology, physiography, climatology and ecology.

The new declaration in 2016 still maintains the responsibilities of landscape architects to protect environment and the connection between man and nature. Meanwhile, the mitigation of climate change, the purpose of social and ecological justice, the design of communities based on bioregional landscape are also emphasized. Meanwhile, the word design itself has also been mentioned four times in the declaration. From what I see in our studio, students carefully arrange the open space, the connection between human recreation and vegetation to achieve sustainability and better landscape. Landscape architects have heavy burden of applying interdisciplinary knowledge to the design process. Landscape architects should also be good planners to know the differences between various kinds of land use so that they could apply their design based the social and ecological context otherwise the design is just beautification of landscape.

To truly understand the complexity and holistic nature of the earth system, there is an urgent need for landscape architects to know urban land use planning and become qualified planners. That is the meaning of the Environmental Planning program here, in Berkeley. We are here not only for more parks, corridors, healthier communities and green space in the urban area, but also for higher purpose of social and ecological justice, environmental sustainability and development of communities.

For policy and planning initiatives, we need to take urban land use planning into more considerate community planning, environmental planning, transportation planning and waterfront space design. We will begin the long journey to use more thoughtful urban land use plan to restore balance in our urban environments and solve urgent issues like social injustice and the rapid urbanization process.

References

Publications:

1. Barnett, Jonathan, et al. Codifying new urbanism: how to reform municipal land development regulations. American Planning Association, 2004.

2. Etingoff, Kim. Urban land use: Community-Based planning. AAP, Apple Academic Press, 2017.

3. Kelly, Eric Damian. "The Transportation Land-Use Link." Journal of Planning Literature, vol. 9, no. 2, 1994, pp. 128–145., doi:10.1177/088541229400900202.

4. Mercier, Jean. "Equity, Social Justice, and Sustainable Urban Transportation in the Twenty-First Century." Administrative Theory & Praxis, vol. 31, no. 2, Jan. 2009, pp. 145–163., doi:10.2753/atp1084-1806310201.

Web Sources:

1.AnalyzingLandUseChangeinUrbanEnvironments.www.bing.com/cr?IG=DCD0582E1352464BAC1C84C30100A60B&CID=0584FE2137306A0D038BF57036366BF2&rd=1&h=9cS0qAeTIbyYooDwRF96kfd9AwDz4og6_BaNKxqqEbA&v=1&r=https%3a%2f%2flandcover.usgs.gov%2furban%2finfo%2ffactsht.pdf&p=DevEx,5066.1.

2. "Call for Presentations Now Open!" Home | CIP, www.cip-icu.ca/.

3. "Central Area Plan." City of Chicago :: Central Area Plan, www.cityofchicago.org/city/en/depts/dcd/supp_info/central_area_plandraft.html

4. "City of Oakland California." General Plan | General Plan and Zoning Updates | City of Oakland | California, www2.oaklandnet.com/Government/o/PBN/OurServices/GeneralPlan/DOWD008821.

5. "Department of Urban and Regional Planning." Land Use & Transportation Planning | Department of Urban & Regional Planning, www.urban.illinois.edu/prospective-students/academic-programs/master-of-urban-planning/concentrations/land-use-transportation-planning.

6. "Menu." National Climate Assessment, nca2014.globalchange.gov/report/sectors/land-use-and-land-cover-change#intro-section-2.

Picture Sources

"Central Area Plan." City of Chicago :: Central Area Plan,

www.cityofchicago.org/city/en/depts/dcd/supp_info/central_area_plandraft.html

"City of Oakland California." General Plan | General Plan and Zoning Updates | City of Oakland | California, www2.oaklandnet.com/Government/o/PBN/OurServices/GeneralPlan/DOWD008821.

https://tti.tamu.edu/featured-project/vmt-fees-study/

https://www.ideasforleaders.com/ideas/how-social-movements-spark-corporate-social-responsibility-initiatives

http://grimstad.uia.no/puls/climatechange/nni04/05nni04.htm

http://www.eastbysoutheast.com/anatomy-of-a-protest-kunming-citizens-voice-concern-over-chemical-plant/

https://www.hongkongfp.com/2015/07/01/px-an-explosive-word-in-china-the-long-history-of-anti-paraxylene-protests/

http://what-when-how.com/climate-change/global-climate-change-and-its-impact-on-urban-areas-urban-climate-processes-trends-and-projections/

https://urbanland.uli.org/sustainability/communities-share-best-practices-climate-change-prep/